## Summary of Results for 100 year Return Period (+40%)

| Storm Duration (mins) | Maximum Control (l/s) | Maximum Overflow (l/s) | Maximum Outflow (l/s) | Maximum Water Level (m OD) | Maximum Depth (m) | Overflow Volume (m³) | Maximum Volume (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 15 Summer | 4.2 | 0.0 | 4.2 | 98.5083 | 0.7283 | 0.0 | 8.7 | O K |
| 30 Summer | 4.6 | 0.0 | 4.6 | 98.6478 | 0.8678 | 0.0 | 10.4 | O K |
| 60 Summer | 4.7 | 0.0 | 4.7 | 98.7083 | 0.9283 | 0.0 | 11.1 | FLOOD RISK |
| 120 Summer | 4.6 | 0.0 | 4.6 | 98.6558 | 0.8758 | 0.0 | 10.5 | FLOOD RISK |
| 180 Summer | 4.3 | 0.0 | 4.3 | 98.5568 | 0.7768 | 0.0 | 9.3 | O K |
| 240 Summer | 4.1 | 0.0 | 4.1 | 98.4578 | 0.6778 | 0.0 | 8.1 | O K |
| 360 Summer | 3.9 | 0.0 | 3.9 | 98.2798 | 0.4997 | 0.0 | 6.0 | O K |
| 480 Summer | 3.9 | 0.0 | 3.9 | 98.1128 | 0.3327 | 0.0 | 4.0 | O K |
| 600 Summer | 3.9 | 0.0 | 3.9 | 97.9963 | 0.2162 | 0.0 | 2.6 | O K |
| 720 Summer | 3.7 | 0.0 | 3.7 | 97.9503 | 0.1702 | 0.0 | 2.0 | O K |
| 960 Summer | 3.1 | 0.0 | 3.1 | 97.9003 | 0.1203 | 0.0 | 1.4 | O K |
| 1440 Summer | 2.4 | 0.0 | 2.4 | 97.8573 | 0.0773 | 0.0 | 0.9 | O K |
| 2160 Summer | 1.8 | 0.0 | 1.8 | 97.8343 | 0.0542 | 0.0 | 0.7 | O K |
| 2880 Summer | 1.4 | 0.0 | 1.4 | 97.8218 | 0.0417 | 0.0 | 0.5 | O K |
| 4320 Summer | 1.0 | 0.0 | 1.0 | 97.8083 | 0.0282 | 0.0 | 0.3 | O K |
| 5760 Summer | 0.8 | 0.0 | 0.8 | 97.8008 | 0.0207 | 0.0 | 0.2 | O K |
| 7200 Summer | 0.7 | 0.0 | 0.7 | 97.7958 | 0.0158 | 0.0 | 0.2 | O K |
| 8640 Summer | 0.6 | 0.0 | 0.6 | 97.7928 | 0.0128 | 0.0 | 0.2 | O K |
| 10080 Summer | 0.6 | 0.0 | 0.6 | 97.7903 | 0.0103 | 0.0 | 0.1 | O K |
| 15 Winter | 4.5 | 0.0 | 4.5 | 98.6133 | 0.8333 | 0.0 | 10.0 | O K |
| 30 Winter | 4.9 | 0.0 | 4.9 | 98.7753 | 0.9953 | 0.0 | 11.9 | FLOOD RISK |
| 60 Winter | 5.0 | 0.0 | 5.0 | 98.8328 | 1.0528 | 0.0 | 12.6 | FLOOD RISK |
| 120 Winter | 4.7 | 0.0 | 4.7 | 98.7228 | 0.9428 | 0.0 | 11.3 | FLOOD RISK |
| 180 Winter | 4.4 | 0.0 | 4.4 | 98.5663 | 0.7863 | 0.0 | 9.4 | O K |
| 240 Winter | 4.0 | 0.0 | 4.0 | 98.4178 | 0.6378 | 0.0 | 7.7 | O K |

| Storm Duration (mins) | Rain (mm/hr) | Time-Peak (mins) |
|---|---|---|
| 15 Summer | 89.23 | 16 |
| 30 Summer | 61.54 | 25 |
| 60 Summer | 40.51 | 42 |
| 120 Summer | 25.63 | 78 |
| 180 Summer | 19.23 | 110 |
| 240 Summer | 15.63 | 144 |
| 360 Summer | 11.65 | 208 |
| 480 Summer | 9.44 | 266 |
| 600 Summer | 8.01 | 316 |
| 720 Summer | 7.00 | 372 |
| 960 Summer | 5.65 | 492 |
| 1440 Summer | 4.17 | 734 |
| 2160 Summer | 3.07 | 1100 |
| 2880 Summer | 2.46 | 1444 |
| 4320 Summer | 1.81 | 2192 |
| 5760 Summer | 1.45 | 2920 |
| 7200 Summer | 1.23 | 3552 |
| 8640 Summer | 1.07 | 4336 |
| 10080 Summer | 0.95 | 5096 |
| 15 Winter | 89.23 | 16 |
| 30 Winter | 61.54 | 27 |
| 60 Winter | 40.51 | 46 |
| 120 Winter | 25.63 | 82 |
| 180 Winter | 19.23 | 118 |
| 240 Winter | 15.63 | 152 |

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## Summary of Results for 100 year Return Period (+40%)

| Storm Duration (mins) | Maximum Control (l/s) | Maximum Overflow (l/s) | Maximum Outflow (l/s) | Maximum Water Level (m OD) | Maximum Depth (m) | Overflow Volume ($m^3$) | Maximum Volume ($m^3$) | Status |
|---|---|---|---|---|---|---|---|---|
| 360 Winter | 3.9 | 0.0 | 3.9 | 98.1242 | 0.3442 | 0.0 | 4.1 | O K |
| 480 Winter | 3.7 | 0.0 | 3.7 | 97.9563 | 0.1762 | 0.0 | 2.1 | O K |
| 600 Winter | 3.2 | 0.0 | 3.2 | 97.9118 | 0.1318 | 0.0 | 1.6 | O K |
| 720 Winter | 2.8 | 0.0 | 2.8 | 97.8803 | 0.1003 | 0.0 | 1.2 | O K |
| 960 Winter | 2.3 | 0.0 | 2.3 | 97.8558 | 0.0758 | 0.0 | 0.9 | O K |
| 1440 Winter | 1.7 | 0.0 | 1.7 | 97.8333 | 0.0532 | 0.0 | 0.6 | O K |
| 2160 Winter | 1.3 | 0.0 | 1.3 | 97.8168 | 0.0367 | 0.0 | 0.4 | O K |
| 2880 Winter | 1.0 | 0.0 | 1.0 | 97.8078 | 0.0277 | 0.0 | 0.3 | O K |
| 4320 Winter | 0.8 | 0.0 | 0.8 | 97.7978 | 0.0178 | 0.0 | 0.2 | O K |
| 5760 Winter | 0.6 | 0.0 | 0.6 | 97.7923 | 0.0123 | 0.0 | 0.1 | O K |
| 7200 Winter | 0.5 | 0.0 | 0.5 | 97.7888 | 0.0088 | 0.0 | 0.1 | O K |
| 8640 Winter | 0.4 | 0.0 | 0.4 | 97.7863 | 0.0063 | 0.0 | 0.1 | O K |
| 10080 Winter | 0.4 | 0.0 | 0.4 | 97.7848 | 0.0048 | 0.0 | 0.1 | O K |

| Storm Duration (mins) | Rain (mm/hr) | Time-Peak (mins) |
|---|---|---|
| 360 Winter | 11.65 | 214 |
| 480 Winter | 9.44 | 256 |
| 600 Winter | 8.01 | 316 |
| 720 Winter | 7.00 | 374 |
| 960 Winter | 5.65 | 490 |
| 1440 Winter | 4.17 | 720 |
| 2160 Winter | 3.07 | 1100 |
| 2880 Winter | 2.46 | 1464 |
| 4320 Winter | 1.81 | 2140 |
| 5760 Winter | 1.45 | 2872 |
| 7200 Winter | 1.23 | 3568 |
| 8640 Winter | 1.07 | 4336 |
| 10080 Winter | 0.95 | 5104 |

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## Rainfall Details

| | | | |
|---|---|---|---|
| Region | ENG+WAL | Shortest Storm (mins) | 15 |
| Return Period (years) | 100 | Longest Storm (mins) | 10080 |
| M5-60 (mm) | 20.000 | Summer Storms | Yes |
| Ratio-R | 0.300 | Winter Storms | Yes |
| Cv (Summer) | 0.750 | Climate Change % | +40 |
| Cv (Winter) | 0.840 | | |

## Time / Area Diagram

Total Area (ha) = 0.050

| Time (mins) from: | to: | Area (ha) |
|---|---|---|
| 0 | 4 | 0.050 |

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## Tank/Pond Details

Invert Level (m) 97.780 Ground Level (m) 98.850

| Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 12.0 | 0.50 | 12.0 | 1.00 | 12.0 | 1.50 | 12.0 | 2.00 | 12.0 | 2.50 | 12.0 |
| 0.10 | 12.0 | 0.60 | 12.0 | 1.10 | 12.0 | 1.60 | 12.0 | 2.10 | 12.0 | | |
| 0.20 | 12.0 | 0.70 | 12.0 | 1.20 | 12.0 | 1.70 | 12.0 | 2.20 | 12.0 | | |
| 0.30 | 12.0 | 0.80 | 12.0 | 1.30 | 12.0 | 1.80 | 12.0 | 2.30 | 12.0 | | |
| 0.40 | 12.0 | 0.90 | 12.0 | 1.40 | 12.0 | 1.90 | 12.0 | 2.40 | 12.0 | | |

## Hydro-Brake Outflow Control

Design Head (m) 1.080 Hydro-Brake Type MD6 Invert Level (m) 97.770
Design Flow (l/s) 5.0 Diameter (mm) 92

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|---|---|---|---|---|---|---|---|---|---|
| 0.10 | 2.7 | 0.80 | 4.4 | 2.00 | 6.9 | 4.00 | 9.7 | 7.00 | 12.9 |
| 0.20 | 3.9 | 1.00 | 4.9 | 2.20 | 7.2 | 4.50 | 10.3 | 7.50 | 13.3 |
| 0.30 | 3.7 | 1.20 | 5.3 | 2.40 | 7.5 | 5.00 | 10.9 | 8.00 | 13.8 |
| 0.40 | 3.6 | 1.40 | 5.8 | 2.60 | 7.8 | 5.50 | 11.4 | 8.50 | 14.2 |
| 0.50 | 3.7 | 1.60 | 6.2 | 3.00 | 8.4 | 6.00 | 11.9 | 9.00 | 14.6 |
| 0.60 | 3.9 | 1.80 | 6.5 | 3.50 | 9.1 | 6.50 | 12.4 | 9.50 | 15.0 |

## Pipe Overflow Control

Pipe Diameter (m) 0.150 Entry Loss Coef 0.500
Slope (1:x) 100.0 Coef of Contraction 0.600
Length (m) 36.000 Invert Level (m) 98.850
Roughness (mm) 0.600

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